

Amendments to the Specification:

On page one, at the beginning of the text please enter the following:

“This is a divisional of Application No. 09/965,485, filed September 27, 2001, now U.S. Patent 6,759,127.”

Please replace the paragraph located on page 2, lines 9-18 with the following amended paragraph:

The prior art, however, denied these users access to fabrics that are inherently FR and treated to provide these additional desirable properties. Manufacturers of inherently flame resistant fibers have specifically warned against adding chemical treatments to their fabrics because of the potential loss of the flame resistance properties. Kosa, Inc., the manufacturer of the trademarked AVORA™ for flame resistant fibers, warns that acrylic resins, silicone and fluorocarbon compounds should be avoided because of their potential for damaging the inherent flame resistant properties of the AVORA™ fabric. See Kosa, “AVORA™ FR” publication, p.6. Therefore, inherently flame resistant polyester fabrics are sold scoured substantially free from intentional or non-intentional chemical treatments. AVORA™ FR (Kosa) polyester and TREVIRA™ CS (Trevira) polyester are examples of polyethylene terephthalate incorporating organic phosphorous compounds in the fiber resulting in the resulting polyester being inherently flame retardant.

Please delete the text at page 3, line 7-15.

Please replace the paragraph beginning on page 3, line 29, ending on page 4, line 6 with the following amended paragraph:

The amount of the detergent constituent employed in the aqueous detergent containing solution can vary widely as can the type of detergent. Generally, desirable results can be obtained when the amount of the detergent constituent employed is from about 0.10 to about 1.0 weight percent, based on the total weight of the detergent solution. The detergent to be employed is typically selected from a group that does not react negatively with the fabric to be scoured or with the fabric's flame resistant properties. Typical examples of suitable detergents that can be employed in the detergent scouring of the textile material, include ~~Solpon 1159, Solpon SPI, and Picoscour Jet~~ SOLPON 1159TM, SOLPON SPITM, and PICOSCOUR JETTM.

Amend the paragraph beginning at page 4, line 7 to read as follows:

"After the fabric has been scoured and rinsed, the scoured material may then be subjected to a chemical treatment step. The chemical treatment of some embodiments of the present invention comprises exposing the inherently FR textile material to an aqueous solution of a wetting agent and a flame retardant and one or more of: an antimicrobial agent, a water repellant agent, or a soil resistance agent."

Please replace paragraph located on page 4, lines 12-24 with the following amended paragraph:

While, not wishing to be bound to a particular theory, a flame retardant may be added to the chemical treatment composition to ensure that the inherent flame retardant remains chemical

coupled with the polyester fiber. It is thought that the presence of the flame retardant in the chemical coating composition may help to kinetically drive the inherently coupled flame retardant to remain chemically bound within the polyethylene terephthalate chain of the polyester fibers. The flame retardant in the chemical coating composition is preferably the same flame retardant that comprises the inherently flame retardant fabric. Typical examples of suitable flame-retardants include Cyclic Phosphonate, ~~Apex Flameproof #1525, Pyron N-75, and Antiblaze NT~~ APEX FLAMEPROOF #1525TM, PYRON N-75TM, and ANTIBLAZE NTTM. The flame retardant to be added to the chemical treatment preferably comprises about 2% to about 10 % by weight of the chemical treatment composition. More preferably, the flame retardant comprises about 4.8 % by weight of the chemical treatment composition.

Please replace the paragraph beginning on page 4, line 25, ending on page 5, line 3 with the following amended paragraph:

The wetting agent of the chemical coating composition reduces the hydrophobicity of the dry fabric and to ensure that the entire fabric is sufficiently contacted with all the chemical treatments. The wetting agent to be added to the chemical treatment preferably comprises between about 0.5% to about 2.0 % by weight of the chemical treatment composition. More preferably, the wetting agent comprises about 0.96 % by weight of the chemical treatment composition. Preferably, the wetting agent is an alcohol. More preferably, the wetting agent is an aliphatic alcohol such as Isopropanol. Typical examples of suitable wetting agents include Nonionic Ethylene Ether Condensates, such as ~~Dexopal 555~~ DEXOPAL 555TM, or Aqueous Cationic Non-rewetting surfactants solutions, such as ~~Mykon NRW-3~~ MYKON NRWTM.

Please replace the paragraph on page 5, lines 16-26 with the following amended paragraph:

The antimicrobial agent to be added to the chemical treatment composition preferably comprises about 0.2% to about 2.0 % by weight of the chemical treatment composition. More preferably, the antimicrobial agent comprises about 0.48 % by weight of the chemical treatment composition. Typical examples of suitable antimicrobial agents include ~~Ultrafresh DM 25~~ ULTRAFRESH DM 25TM, an octhlinone or ~~Bioshield AM 500~~ BIOSHIELD AM 500, an organosilane. Preferably, the antimicrobial agent is a “molecularly bonded” antimicrobial agent. More preferably, the antimicrobial agent is an organofunctional silane. Even more preferably, the antimicrobial agent is an organosilane composition comprising about 16 % by weight of chloropropyltrihydroxysilane and about 84% by weight of Octadecylaminodimethyltrihydroxysilylpropyl Ammonium Chloride, available from Aegis under the trademark AEM 5700TM.

Please replace the paragraph beginning on page 5, line 27, ending on page 6, line 8 with the following amended paragraph:

For those cases where fluid or soil repellent properties are desired, a fluid or soil repellent agent is added to the chemical treatment composition to improve the fabric's water repellency and the fabric's resistance to staining. Also, a combination fluid repellent/soil resistant agent may be added to the chemical treatment composition. Preferably, in the present invention, the fluid repellent agent and soil resistant agent is added as a combination fluid repellent/soil resistant agent. More preferably, the fluid repellent/soil resistant agent is a fluorochemical. Even more preferably, the fluid repellent/soil resistant agent is a fluorochemical available from

Dupont under the trademark ZONYL 7040™, which is a water based dispersion of fluorinated acrylic co-polymer. The combination fluid repellent/soil resistant agent to be added to the chemical treatment preferably comprises about 2% to about 10 % by weight of the chemical treatment composition. More preferably, the fluid repellent/soil resistant agent comprises about 3.6 % by weight of the chemical treatment composition.

Please replace Table 1 on page 7 with the following amended Table 1:

Table 1:

Warp Yarn:	150/60 SD RD TEXT SET AVORA FR™ POLYESTER				
Fill Yarn:	2/150/60 SD RD TEXT SET AVORA FR™ POLYESTER				
Ends/inch:	60	Picks/inch:	38	Weight:	5.5 osy

Please replace the paragraph on page 7, lines 6-9 with the following amended paragraph:

A chemical treatment composition was then prepared in an aqueous-based solution comprising 0.96 % by weight of Isopropanol, 4.8 % by weight of ~~Flame Retardant 50~~ FLAME RETARDANT 50™, 3.6 % by weight of ZONYL 7040™ and 0.48 % by weight of AEM 5700™ as seen in Table 2.

Please replace Table 2 on page 7 with the following amended Table 2:

Table 2:

Chemical Name	General Description	Treatment	Amount (% weight)
Isopropanol	Aliphatic Alcohol	Wetting Agent	0.96 %
Flame Retardant 50 <u>FLAME RETARDANT 50™</u>	Cyclic Phosphonate	Flame Retardant	4.8 %
ZONYL 7040™	Fluorochemical	Fluid/Stain Repellent	3.6 %

AEM 5700™	Organosilane	Antimicrobial	0.48 %
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Please replace the paragraph on page 8, lines 3-9 with the following amended paragraph:

As summarized in Table 3, the post-weave chemical treatment that includes the ~~Flame Retardant 50~~ FLAME RETARDANT 50™ has a flame resistance substantially similar to the untreated inherently flame resistance fabric. It is thought that the presence of the flame retardant in the chemical coating composition may kinetically drive the inherent flame retardant to remain chemically bound within the polyethylene terephthalate chain of the polyester fibers. The fluid repellency has an excellent spray rating resistance. Finally, the test for the presence of the antimicrobial agent also passed.

Please replace the paragraph on page 9, lines 10-14 with the following amended paragraph:

After drying, the finished fabric was tested according to standard published test protocols to assess its flame resistance properties. As summarized in Table 5, the post-weave chemical treatment in Table 4, which omits the ~~Flame Retardant 50~~ FLAME RETARDANT 50™, failed the NFPA 701 - 1996 Edition flame resistance test. (The fill data is not required for NFPA 701 test)

Amend the paragraph beginning at page 9, line 15 to read as:

“As taught by the Kosa, “*AVORA™ FR*” publication, the inherently flame resistance properties of the AVORA™ fabric degrade after a post-weave chemical treatment. However, the present inventor has found that if a flame retardant is added during the chemical treatment ~~coating~~ process, the fabric retains a flame resistance substantially similar to untreated inherently

flame resistance fabric. In certain cases the flame retardant is not required to be added to the chemical treatment.”

Please replace Table 8 located on page 11 with the following amended Table 8:

Table 8:

Chemical Name	General Description	Treatment	Amount
Flame Retardant 50 <u>FLAME RETARDANT 50™</u>	Cyclic Phosphonate	Flame Retardant	40 g/400 mL mix
Picoseft CHP <u>PICOSOFT CHP™</u>		Softener	20 g/400 mL mix
Characteristic Tested	Test Method	Units	Results
Flammability	NFPA 701 - 1996 Edition	% Weight Loss & Afterburn Time	Warp – 20.4 % Afterflame < 2 sec. Passed
			Fill – 27.0 % Afterflame < 2 sec. Passed

Please replace Table 9 located on page 12 with the following amended Table 9:

Table 9:

Chemical Name	General Description	Treatment	Amount
AEM 5700™	Organosilane	Antimicrobial	4 g/400 mL mix
ZONYL 7040™	Fluorochemical	Fluid/Stain Repellent	30 g/400 mL mix
Picoseft CHP <u>PICOSOFT CHP™</u>		Softener	20 g/400 mL mix

Characteristic Tested	Test Method	Units	Results
Flammability	NFPA 701 - 1996 Edition	% Weight Loss & Afterburn Time	Warp – 23.7 % Afterflame < 2 sec. Passed
			Fill – 26.0 % Afterflame < 2 sec. Passed

Please replace Table 10 located on page 12 with the following amended Table 10:

Table 10:

Chemical Name	General Description	Treatment	Amount
ZONYL 7040™	Fluorochemical	Fluid/Stain Repellent	30 g/400 mL mix
Flame Retardant 50 <u>FLAME RETARDANT 50™</u>	Cyclic Phosphonate	Flame Retardant	40 g/400 mL mix
Characteristic Tested	Test Method	Units	Results
Flammability	NFPA 701 - 1996 Edition	% Weight Loss & Afterburn Time	Warp – 25.7 % Afterflame < 2 sec. Passed
			Fill – 28.2 % Afterflame < 2 sec. Passed

Please replace Table 11 located on page 13 with the following amended Table 11:

Table 11:

Chemical Name	General Description	Treatment	Amount
AEM 5700™	Organosilane	Antimicrobial	4 g/400 mL mix
Flame Retardant 50 <u>FLAME RETARDANT 50™</u>	Cyclic Phosphonate	Flame Retardant	40 g/400 mL mix
Characteristic	Test Method	Units	Results

Tested			
Flammability	NFPA 701 - 1996 Edition	% Weight Loss & Afterburn Time	Warp – 28.2 % Afterflame < 2 sec. Passed
			Fill – 24.7 % Afterflame < 2 sec. Passed

Please replace the paragraph on page 14, lines 2-5 with the following amended paragraph:

Another inherently resistant fiber, ~~Trevira-CS~~ TREVIRA CS™ is similar to AVORA™, the two fibers having previously been available as European and American versions of the product from the same manufacturer, which has recently been divided into two separate organizations, each selling its own inherently FR fiber.

Please replace the paragraph on page 14, lines 7-8 with the following amended paragraph:

Accordingly, ~~Trevira-CS~~ TREVIRA CS™ fibers was also tested in a woven fabric having the following construction:

Please replace the sentence beginning on page 14, line 20 and the table thereafter with the following amended sentence and table:

An additional sample of ~~Trevira-CS~~ TREVIRA CS of the same construction was finished with:

Chemical Name	General Description	Treatment	Amount
<u>ZONYL 7040</u> <u>ZONYL 7040™</u>	Fluorochemical	Fluid/Stain Repellent	30 g/400 mL
<u>AEM-5700</u> <u>AEM 5700™</u>	Organosilane	Antimicrobial	4 g/400 mL